Space Weather Forecast

Issued on Wednesday, 27 March 2024 at 12:44 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Further Minor/Moderate radio blackouts (R1/R2) expected. A reducing chance of Minor geomagnetic storms (G1) as coronal mass ejection (CME) influence eases.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Moderate with the large sunspot region in the southwest producing further Moderate-class flares in the past 24 hours. Seven active regions currently on the visible disc. The large region in the southwest quadrant (AR3615) remains by far the most magnetically complex group, with some waxing/waning of its rearward spots. Changes in other groups were minor in comparison.

No further significant Earth-directed Coronal Mass Ejections (CMEs) observed on available imagery over the last 24hr.

Solar Wind / Geomagnetic Activity: The solar wind at L1 measured by ACE and DSCOVR were initially strong (above 600km/s) in the aftermath CME that arrived on the 24th March, before a steady decline to Elevated levels, currently near 500km/s. The magnetic field (IMF) was at weak levels. The all-important southward component fluctuated weakly between positive and negative. The net result of the above solar wind measures was Unsettled to Quiet (Kp1-3) geomagnetic conditions.

Energetic Particles / Solar Radiation: Solar radiation was below the S1 threshold.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate solar activity is expected, with further Moderate-class flares expected from primarily the large and highly active region moving into the western disc through the forecast period, with a slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: A coronal mass ejection (CME) associated with the strong flare on the 23rd March arrived at L1 at 24/1410UTC. There are no other Earth directed CMEs currently in the forecast.

Solar winds currently at Elevated levels and are expected to decline erratically through day 1 (27 Mar) as the impacts from the CME continue to wane. Winds are expected to continue to fall towards background values from day 2 (28 Mar) onward in the absence of forecast enhancements.

Geomagnetic activity is expected to be Unsettled (Kp 3) to quiet (Kp1-2) with a slight chance of an Active (Kp 4) or G1/Minor storm interval on day 1 (27 Mar), steadily reducing to mostly Quiet (Kp 1-2) conditions throughout the remainder of the period.

Energetic Particles / Solar Radiation: Solar radiation is continuing to decline from recent enhancement. A continued slow decline is expected in the absence of further significant flare activity.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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